

**What is claimed is:**

1       1. A surgical instrument for treating female urinary stress incontinence comprising:  
2           a) a sling contoured to the anatomical configuration of the mid-urethra, proximal  
3                  urethra and base of the bladder for implanting into the lower abdomen of a female  
4                  providing support to mid-urethral and bladder neck sphincteric continence sites as  
5                  well as support for the base of the bladder, said sling defining in part a tissue  
6                  remodeling portion fixedly attached to and surrounding a mesh section; and  
7           b) a sling transfer instrument having a distal end and a proximal end, said instrument  
8                  defining in part a progressively curved shaft portion positioned between distal and  
9                  proximal ends with an attached handle located at its proximal end, and a means for  
10                 attaching said sling to the distal end of said shaft.

1       2. The sling transfer instrument of claim 1 wherein first handle further comprises a digit  
2                  control accommodation, said digit accommodation dimensioned approximately 2.5  
3                  to 4.5 cm in length, 1.0 to 4.0 cm in width and 1.5 cm in depth.

1       3. The mesh sling of claim 1 wherein said mesh portion is comprised of non-  
2                  absorbable polymers and filaments of said mesh have a diameter from about .002  
3                  inch to about .08 inch.

1           4. The mesh sling of claim 1 wherein said mesh portion is comprised of absorbable  
2           polymers and filaments of said mesh have a diameter from about .012 inch to about  
3           0.1 inch.

1           5. The mesh sling of claim 1 wherein said mesh portion is approximately 60 cm in  
2           length, approximately 1.5 cm to 3.0 cm at its widest and generally center most  
3           position and approximately 1.0 cm wide at each of its opposite ends.

1           6. The transfer instrument of claim 1 wherein said progressively curved shaft portion  
2           has a diameter from about 3.5 mm to about 4.0 mm and a progressive curve with a  
3           maximum radius of approximately 5.1 cm.

1           7. The transfer instrument of claim 1 wherein said distal end of said shaft portion is  
2           oriented in a direction opposite that of said shaft's curved portion, said distal end of  
3           said shaft portion being approximately 1.0 cm in length and approximately 4.0 mm  
4           in width at an end opposite an end with handle attached to said shaft portion.

1           8. The transfer instrument of claim 1 wherein the progressively curved shaft is further  
2           comprised of a luminous coating.

- 1           9. A surgical instrument for treating female urinary stress incontinence comprising:
- 2           a) a sling contoured to the anatomical configuration of the mid-urethra, proximal
- 3           urethra, bladder neck and base of the bladder for implanting into the lower abdomen
- 4           of a female providing support to mid-urethral and bladder neck sphincteric
- 5           continence sites as well as support for the base of the bladder to restore the normal
- 6           anatomical relationship of the urethra to the bladder, said sling defining in part a
- 7           mesh section fixedly attached to and surrounding a tissue remodeling portion; and
- 8           b) a sling transfer instrument having a distal end and a proximal end, said instrument
- 9           defining in part a progressively curved shaft portion positioned between distal and
- 10          proximal ends with a first detachable handle located at its proximal end, a second
- 11          attachable handle positioned said shaft's distal end, and a means for attaching said
- 12          sling to the proximal end of said shaft.

1           10. The sling transfer instrument of claim 9 wherein said first handle further comprises

2           a digit control accommodation, said digit accommodation dimensioned

3           approximately 2.5 to 4.5 cm length and 1.0 to 4.0 cm in width and approximately 1.5

4           cm in depth.

1           11. The mesh sling of claim 9 wherein said mesh portion is comprised of non-

2           absorbable polymers and filaments of said mesh have a diameter from about .002

3           inch to about .08 inch.

1           12. The mesh sling of claim 9 wherein said mesh portion is comprised of absorbable  
2           polymers and filaments of said mesh have a diameter from about .012 inch to about  
3           0.1 inch.

1           13. The mesh sling of claim 9 wherein said mesh center portion is approximately 4.0 cm  
2           in length, approximately 2.5 cm at its widest and generally center most position and  
3           approximately 1.0 cm wide at each of its opposite ends.

1           14. The transfer instrument of claim 9 wherein said progressively curved shaft portion  
2           has a diameter from about 3.5 mm to about 4.0 mm and a progressive curve with a  
3           maximum radius of approximately 5.1 cm.

1           15. The transfer instrument of claim 9 wherein said tip proximal end of said shaft  
2           portion is oriented in a direction opposite that of said shaft's curved portion, said  
3           proximal end of said shaft 1.0 cm in length and approximately 4.0 mm in width at an  
4           end opposite that end attached to said shaft portion.

1           16. The transfer instrument of claim 9 wherein said progressively curved shaft portion  
2           has a diameter from about 3 mm to about 4.5 mm and a progressive curve with a  
3           maximum radius of approximately 4 cm.

17. The transfer instrument of claim 9 wherein the progressively curved shaft is further comprised of a luminous coating.

- a) providing a sling defining in part a tissue remodeling portion and a mesh section and contoured to the anatomical configuration of the mid-urethra, proximal urethra and base of the bladder;
  - b) providing a sling transfer instrument having a distal end and a proximal end with a progressively curved shaft portion positioned between said distal and proximal ends with an insertion handle located at the instrument's proximal end;
  - c) positioning the sling transfer instrument's insertion handle within the human hand and utilizing said handle to guide the curved tip at the instrument's distal end through the abdominal wall, through the retropubic space allowing allow the tip of the instrument to be in contact with the posterior surface of the pubic bone as it traverses the retropubic space, and continues into the vagina;
  - d) providing a second sling transfer instrument and repeating step (c);
  - e) performing cystoscopy when the tips of both instruments are positioned within the vagina;
  - f) attaching said sling to the each of the distal ends of the sling transfer instruments positioned in accordance with steps (c) and (d);

- 20                   g) withdrawing or otherwise positioning the distal ends of the sling transfer  
21                   instruments positioned in accordance with steps (c) and (d) to cause the  
22                   attached sling to form a U-shape around mid-urethral and bladder neck  
23                   sphincteric continence sites; and  
24                   h) displacing said sling from the sling transfer instruments.

1                   19. The method of claim 18 further comprising the adjusting of sling tension via a sling  
2                   tension measurement component.

1                   20. A transvaginal deployment method for treating female urinary stress incontinence  
2                   comprising:  
3                   a) providing a sling defining in part a tissue remodeling portion and a mesh  
4                   section and contoured to the anatomical configuration of the mid-urethra,  
5                   proximal urethra and base of the bladder;  
6                   b) providing a sling transfer instrument having a distal end and a proximal end  
7                   with a progressively curved shaft portion positioned between said distal and  
8                   proximal ends with a detachable insertion handle located at the instrument's  
9                   proximal end;  
10                  c) positioning the sling transfer instrument's detachable insertion handle within  
11                  the human hand and using said handle to guide the curved tip at the  
12                  instrument's distal end through the vaginal wall, behind the pubic bone,

- 13                          through the abdominal wall and exiting the abdominal wall below the pubic  
14                          hair line;  
15                          d) disengaging the detachable insertion handle located at the instrument's  
16                          proximal end from the progressively curved portion of sling transfer tool;  
17                          e) attaching a sling transfer handle to the exited curved tip;  
18                          f) attaching the sling of step (a) to the sling transfer instrument's proximal end;  
19                          g) positioning the sling transfer instrument's sling transfer handle within the  
20                          human hand and using said handle to retrieve or otherwise pull the sling  
21                          attached to the instrument's proximal end through the vaginal wall, behind  
22                          the pubic bone, through the tissues of the abdomen traversing perforations  
23                          made in the vaginal wall and abdominal wall previously in step (c);  
24                          h) providing a second sling transfer instrument and repeating steps (c) through  
25                          (g) on a side of the body to cause the sling to be positioned to form a U-  
26                          shape around mid-urethral and bladder neck sphincteric continence sites;  
27                          i) displacing said sling from the sling transfer instrument subsequent to said  
28                          sling's passage through the abdominal wall.

- 1                          21. The method of claim 20 further comprising the adjusting of sling tension via a spring  
2                          loaded sling tension measurement component.